



# Prediabetes Risk Factors in Montana Adults

## Key findings

- 26% of Montana adults have an increased risk of prediabetes and type 2 diabetes.
- High risk scores were more common in veterans (45%), men (35%), people living with a disability (35%), and people in rural areas (32%).
- More people may be at risk depending on family history of diabetes.
- [The Prediabetes Risk Test](#) is available online.
- Being at high risk does not confirm having prediabetes or type 2 diabetes.
- Prediabetes is reversible. Losing a small amount of body weight and engaging in regular physical activity can help reverse this condition.

## Questions?



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## What is prediabetes?

Prediabetes occurs when blood sugar levels are elevated but not yet at the diabetes threshold<sup>1</sup>. Prediabetes is a risk factor for type 2 diabetes and shares several risk factors with the disease. Being overweight or having a family history of diabetes are well-known risk factors. Age, race, and physical activity levels also play a role<sup>2,3</sup>. The good news is that prediabetes can be reversed with lifestyle changes. Losing weight, eating healthy foods, and getting regular exercise can help lower blood sugar levels and reduce the risk of developing type 2 diabetes. It is important to make these changes as soon as possible to prevent the condition from getting worse<sup>1,4</sup>.

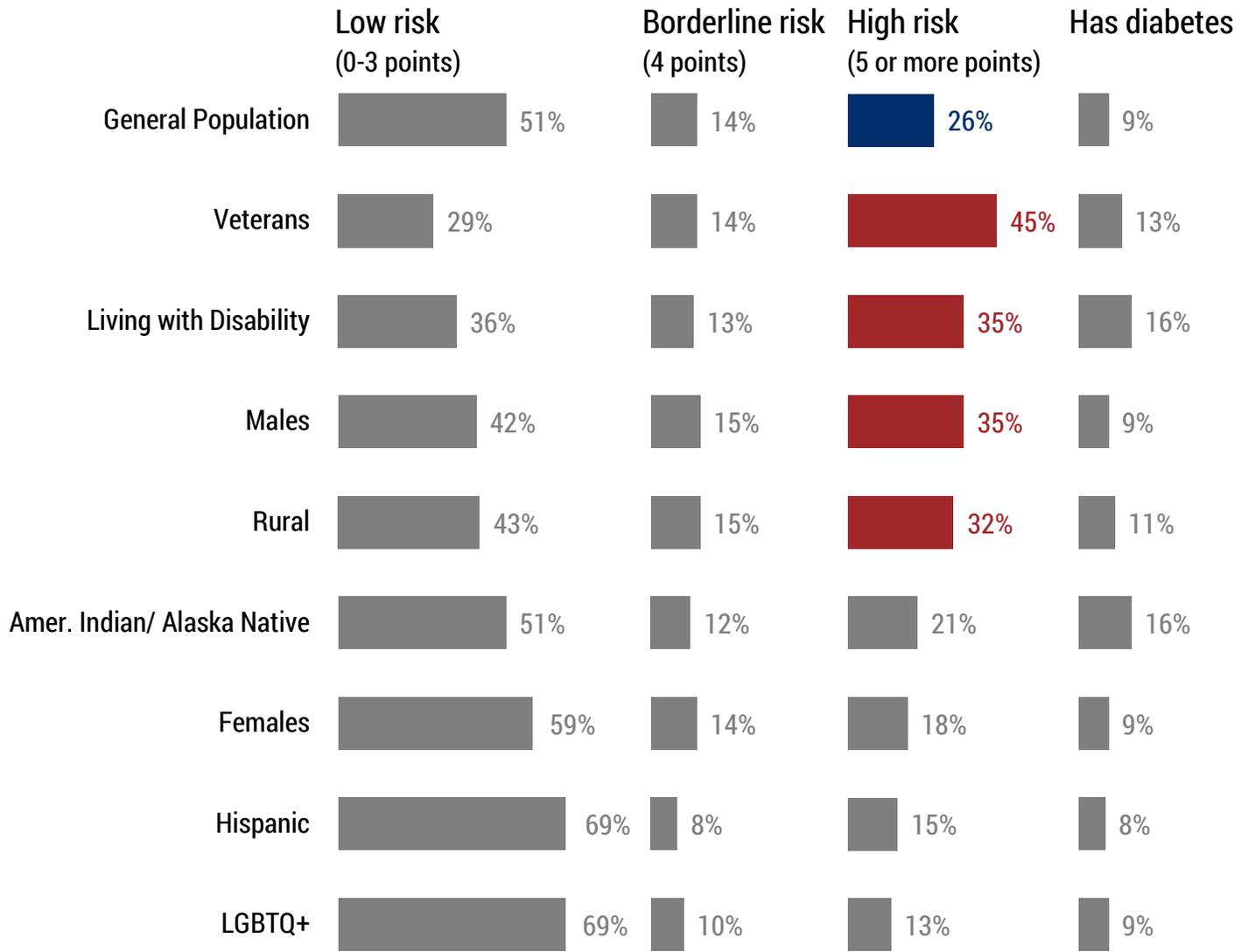
The Centers for Disease Control and Prevention (CDC) offers a Prediabetes Risk Test (Appendix A) that is available online<sup>5</sup>. This test can also be accessed on the [Montana Diabetes Program webpage](#). This report describes diabetes risk and diabetes prevalence using data from the 2021 Behavioral Risk Factor Surveillance System (BRFSS) to estimate the prevalence of Montana adults who are at an increased risk for having prediabetes and diabetes according to the Prediabetes Risk Test.

## Identifying and caring for patients with prediabetes

- The Montana Diabetes Program offers the National Diabetes Prevention Program throughout the state. This lifestyle change program is effective in controlling modifiable risk factors for diabetes. Program eligibility and locations can be found on the [Montana Diabetes Prevention webpage](#).
- Review the [Standards of Care in Diabetes – 2024](#) published by the ADA for the most current recommendations. Standards 2.9 - 2.16 all address the detection of prediabetes and type 2 diabetes<sup>6</sup>.
- Screening for prediabetes and type 2 diabetes should be done using an assessment of risk factors or validated risk calculator in asymptomatic adults<sup>6</sup>.
- Testing for prediabetes and type 2 diabetes should be considered in adults of any age with overweight or obesity who have one or more risk factors. For all other people, screening should begin at age 35 years<sup>6</sup>.
- Blood assays that are appropriate for screening and detection of prediabetes and type 2 diabetes are FPG, 2-h PG during 75-g OGTT, and A1C<sup>6</sup>.



**Figure.** More than a quarter of Montana adults are at **high risk for diabetes**, with some populations experiencing a **disproportionately high risk** compared to the general population.



SOURCE: BRFSS 2021. Note: scores are calculated using six of the seven questions from the Prediabetes Risk Test. Actual values are expected to be higher.



## Prediabetes risk among Montana adults

We can estimate answers to six out of the seven questions on the Prediabetes Risk Test by reviewing answers to questions on the 2021 BRFSS<sup>7</sup>. Normally the scores can range between 0-10, with a score of 5 or higher indicating an increased risk of prediabetes (Appendix A), however, due to lacking information on family history of diabetes, scores in this report range from 0-9. To adjust for the uncertainty on whether a person would be low risk or high risk, scores of 4 were assigned a category of *borderline risk*, where family history of diabetes would be the determining factor.

Without including family history of diabetes in the estimate, **a quarter (26%) of Montana adults had a score of 5 or higher**, indicating an increased risk for having prediabetes and type 2 diabetes. This was **higher among males, veterans, people with disabilities, and people in rural communities**. Half of the population was definitively at lower risk, scoring 3 or fewer points, and 14% had a score of 4, indicating that they may be at high risk depending on family history of diabetes (Figure).

## Interpreting a high score

Some risk factors for diabetes are not things individuals can change, like age, race, and genetics. However, there are risk factors individuals can change. One such risk factor is being physically active. Although activity level is not defined on the Prediabetes Risk Test, the Centers for Disease Control and Prevention (CDC) recommends adults reach 150 minutes of moderate-intensity activity, such as brisk walking, and two days of muscle strengthening each week<sup>8</sup>. In the 2021 BRFSS one in five Montanans (21%) reported not regularly engaging in physical activities.

Combined with healthy eating habits, physical activity contributes to the management of weight, which is another modifiable risk factor for prediabetes. Height and weight are combined to determine if someone is at an increased risk of prediabetes, earning up to three points on the Prediabetes Risk Test depending on how heavy someone is compared to their height. Two out of every three Montanans (67%) experienced an increased risk because of their weight.

Eating healthy food and being physically active can also help keep your blood pressure at a healthy level. High blood pressure and prediabetes often happen together and can make it more likely for someone to have type 2 diabetes. Having prediabetes and diabetes can cause damage throughout the body, including to the heart and blood vessels. This means that having high blood pressure may mean that someone already has one of these diseases. In the 2021 BRFSS, one in three (30%) Montanans reported having a history of high blood pressure.

## Conclusion

Even with unknown family history of diabetes and limited information on physical activity levels, many Montanans are at risk of developing prediabetes and type 2 diabetes. While elevated risk does not mean you have either disease, knowing about your risks can help you manage your own health. It's important that individuals talk to their healthcare providers about their diabetes risk so they can identify lifestyle changes that will keep them happy and healthy. The U.S. Preventive Services Task Force recommends that all adults between the ages of 35-70 years who are overweight or obese should get screened for prediabetes and type 2 diabetes<sup>9</sup>.

The National Diabetes Prevention Program is an evidence-based lifestyle change program created to prevent or delay the onset of type 2 diabetes and cardiovascular disease. This program is offered both in-person and virtually in Montana. To learn more about the program and where you can participate, visit the [Montana Diabetes Prevention Program](#) website.



## Data Analysis

The data presented in this report come from the 2021 Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a telephone survey conducted annually among non-institutionalized persons aged 18 or more years. Participants are randomly selected using both cell phone and land line numbers. In 2021, the survey assessed diabetes status and management as well as prediabetes risk. Values from the BRFSS were used to calculate a score on the Prediabetes Risk Test<sup>7</sup>.

The Prediabetes Risk Test is a self-assessment tool provided by the CDC and American Diabetes Association (ADA). Scores can range from 0 to 10, with a score of 5 or higher indicating an increased risk for having prediabetes and being at a higher risk for type 2 diabetes<sup>6</sup>. It is not a diagnostic tool; only your doctor can tell for sure if you have type 2 diabetes or prediabetes. Blood sugar testing is needed to determine if you have prediabetes or type 2 diabetes.

## References

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7. Montana Department of Public Health and Human Services (MT DPHHS) and Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Helena, MT: Montana Department of Public Health and Human Services, Public Health and Safety Division, [2021].
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# Appendix A: Prediabetes Risk Test

Available online through the [Montana Diabetes Program](#) webpage. Additionally available to be administered online from the [CDC](#), the [ADA](#) webpages, or printed from the [CDC prediabetes webpage](#).

## Prediabetes Risk Test



**1. How old are you?** Write your score in the boxes below

Younger than 40 years (0 points) \_\_\_\_\_

40–49 years (1 point) \_\_\_\_\_

50–59 years (2 points) \_\_\_\_\_

60 years or older (3 points) \_\_\_\_\_

**2. Are you a man or a woman?**

Man (1 point) Woman (0 points) \_\_\_\_\_

**3. If you are a woman, have you ever been diagnosed with gestational diabetes?**

Yes (1 point) No (0 points) \_\_\_\_\_

**4. Do you have a mother, father, sister, or brother with diabetes?**

Yes (1 point) No (0 points) \_\_\_\_\_

**5. Have you ever been diagnosed with high blood pressure?**

Yes (1 point) No (0 points) \_\_\_\_\_

**6. Are you physically active?**

Yes (0 points) No (1 point) \_\_\_\_\_

**7. What is your weight category?**

(See chart at right) \_\_\_\_\_

**Total score:**

Height	Weight (lbs.)		
4'10"	119-142	143-190	191+
4'11"	124-147	148-197	198+
5'0"	128-152	153-203	204+
5'1"	132-157	158-210	211+
5'2"	136-163	164-217	218+
5'3"	141-168	169-224	225+
5'4"	145-173	174-231	232+
5'5"	150-179	180-239	240+
5'6"	155-185	186-246	247+
5'7"	159-190	191-254	255+
5'8"	164-196	197-261	262+
5'9"	169-202	203-269	270+
5'10"	174-208	209-277	278+
5'11"	179-214	215-285	286+
6'0"	184-220	221-293	294+
6'1"	189-226	227-301	302+
6'2"	194-232	233-310	311+
6'3"	200-239	240-318	319+
6'4"	205-245	246-327	328+
	<b>1 Point</b>	<b>2 Points</b>	<b>3 Points</b>
	You weigh less than the 1 Point column (0 points)		

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009. Original algorithm was validated without gestational diabetes as part of the model.

### If you scored 5 or higher

You are at increased risk for having prediabetes and are at high risk for type 2 diabetes. However, only your doctor can tell for sure if you have type 2 diabetes or prediabetes, a condition in which blood sugar levels are higher than normal but not high enough yet to be diagnosed as type 2 diabetes. **Talk to your doctor to see if additional testing is needed.**

*If you are African American, Hispanic/Latino American, American Indian/Alaska Native, Asian American, or Pacific Islander, you are at higher risk for prediabetes and type 2 diabetes. Also, if you are Asian American, you are at increased risk for type 2 diabetes at a lower weight (about 15 pounds lower than weights in the 1 Point column). Talk to your doctor to see if you should have your blood sugar tested.*

### You can reduce your risk for type 2 diabetes

Find out how you can reverse prediabetes and prevent or delay type 2 diabetes through a **CDC-recognized lifestyle change program** at <https://www.cdc.gov/diabetes/prevention/lifestyle-program>.

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Risk Test provided by the American Diabetes Association and the Centers for Disease Control and Prevention.